CLAIMS

1. A method of reducing high cycle fatigue of a turbocharger fitted to an internal combustion engine in which fuel supply to the engine is controlled by an electronic engine management unit (ECU) in accordance with a fuel map of fuel values required to meet different engine operating conditions, the method comprising:

varying the fuel value F associated with a particular engine operating condition to thereby prevent the turbocharger running at the same constant speed each time said particular engine operating condition arises.

2. A method according to claim 1, wherein the fuel supply is varied by modifying a fuel value F determined by the engine map to meet said particular engine operating condition by applying a varying perturbation E to the fuel value F.

3. A method according to claim 2, wherein each time said particular engine operating condition arises the specified fuel value F is perturbed and then remains constant for the duration of that instance of said engine operating condition, but wherein the perturbation value varies between different instances at which said particular engine operating condition arises.

4. A method according to claim 2, wherein said perturbation value is randomly selected from a pre-determined range of values.

6. A method according to claim 4, wherein said perturbation value is sequentially selected from a range of possible perturbation values.

7. A method according to any one of claims 4 to 6, wherein said pre-determined range of values is determined as a proportion of the specified fuel value F.

8. A method according to claim 7, wherein said proportion is not greater than 3% of the fuel value.

9. A method according to claim 2, wherein said perturbation value varies overtime throughout the duration of said particular engine operating condition, so that whilst that said particular engine operating condition the engine and turbocharger running speed varies over time.

10. A method according to claim 9, wherein said time varying perturbation is a regular periodic perturbation to the fuel value.

11. A method according to claim 9 or 10, wherein said perturbation value varies across a pre-determined range of values.

12. A method according to claim 11, wherein said pre-determined range of values is pre-determined as a percentage of the specified fuel value F.

13. A method according to claim 12, wherein said percentage is +/- 3% of the specified fuelling value.

14. A method according to any one of claims 2 to 13, wherein the specified fuel value F is supplied to the fuel supply control system and a separate perturbation signal is also applied to a fuel supply control system to modify the fuel value F.

15. A method according to any one of claims 2 to 13, wherein the specified fuel value determined from the engine map is modified by application of said perturbation by the ECU prior to supplying a fuel supply signal to the engine fuel supply system.

16. A method according to any preceding claim, wherein the fuel supply value is varied for each one of a range of engine operating conditions.

17. A method according to claim 16, wherein said range of engine operating conditions is the full range of engine operating conditions encountered by the engine.

18. A method according to claim 16, wherein said range of engine operating conditions are selected operating conditions which are pre-determined as likely to give rise to high cycle fatigue.

19. A fuel supply control system for a turbocharged internal combustion engine, the control system comprising means for varying the fuel value supplied to meet a particular engine operating condition to thereby prevent the turbocharger from running at the same constant speed each time said particular engine operating condition arises.